

Remarks

Claims 1-33 are pending in the application.

Claims 1-33 are rejected.

The paragraph beginning from line 19, page 7 to line 4, page 8 is amended.

Claims 2, 7, and 19 are amended.

I. Claim Rejections – 35 U.S.C. §112(a). Claims 6 and 11

Claims 6 and 11 are rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicant has amended the specification to include data resistors that comprise metal oxide. Applicant respectfully submits that the rejection of claims 6 and 11 under 35 U.S.C. § 112 has been overcome.

(b). Claims 2-6 and 19-22

Claims 2-6 and 19-22 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Applicant has amended claims 2 and 19 to more particularly point out the invention. Applicant respectfully submits that the rejection has been overcome.

With respect to claim 2, the Examiner asserted that the term, "conductive properties," is vague. Applicant has amended claim 2 to further define "conductive properties" to "electrical conductive properties," which term is sufficiently definite.

With respect to claims 3-6, the rejection 35 U.S.C. §112, second paragraph, has been overcome for the reason discussed above with respect to claim 2 from which these claims depend.

With respect to claim 19, the Examiner asserted that the two terms, "properties of conductivity" and "similar", are vague. Applicant has amended claim 19 such that the term "similar" is not used and "properties of conductivity" is replaced by "electrical

conductive properties.” The reference resistor is now selected such that a change in electrical conductive properties of the reference resistor matches a change in electrical conductive properties of said data resistor.

II. Claim Rejections – 35 U.S.C. §103

(a). Claims 1-3, 6-8, 11-19, and 22-33

Claims 1-3, 6-8, 11-19, and 22-23 are rejected under 35 U.S.C §103 as being unpatentable over U.S. Patent No. 4,727,269 issued February 23, 1988 to Luich (hereinafter “Luich”) in view of U.S. Patent No. 5,548,252 issued August 20, 1996 to Watanabe et al. (hereinafter “Watanabe”). Applicant respectfully disagrees that a prima facie case of obviousness has been established according to MPEP 2143.

With respect to claim 1, the Examiner asserted that Luich discloses a ROM device having a plurality of data resistors 13 and 14, and a temperature compensation circuit to maintain current through the circuit. Resistors 13 and 14 in FIG. 1 of Luich are not data resistors as featured by Applicant’s claim 1. The ROM claimed by Applicant’s claim 1 uses data resistors to interconnect the input word lines and the output bit lines. See Applicant’s specification, claim 1, page 12, lines 1-2. In contrast, resistors 13 and 14 in FIG. 1 of Luich are not connected between a word line and a bit line; they are connected between a voltage source and bit lines. See FIG. 1 of Luich. Thus, Luich and Watanabe when combined fail to teach or suggest all the claim limitations in claim 1.

Furthermore, the ROM claimed by Applicant’s claim 1 uses a temperature compensation circuit to maintain a current through a *selected* one of said data resistors. See Applicant’s specification, claim 1, page 12, lines 2-3. In contrast, the current in the ROM of Luich maintained by the PNP current mirror and the temperature compensated current sink is provided to the array bit lines and sense amplifier. See FIG. 1 in Luich. The current does not flow through either resistor 13 and resistor 14 which are labeled as data resistors by the Examiner. Thus, the current is not through a selected one of the data resistors as featured by Applicant’s claim 1.

The Examiner also asserted that that the device disclosed by Luich comprises a reference resistor (24) wherein the conductivity is responsive to changes in temperature (col. 3, lines 3-14 and col. 3 lines 45-61) as featured by Applicant's claim 1 (Applicant's specification, claim 1, page 12, lines 5-6). Luich, however, does not disclose or suggest that resistor 24 in FIG. 1 of Luich changes its conductivity in response to changes in temperature. As stated in Luich, as temperature increases, the V_{be} of transistor 26 in FIG. 1 decreases, causing a larger voltage drop across resistor 24. See Luich, col. 3, lines 17-20. Thus, Luich **does not disclose or suggest that the conductivity of resistor 26 is responsive to changes in temperature**; rather, the conductivity between the base and the emitter of transistor 26 is responsive to the temperature changes resulting in changes in the V_{be} . Reconsideration and withdrawal is respectfully requested.

The Examiner also asserted that a constant current source is coupled to a reference resistor to provide a constant current that develops a voltage across the reference resistor (col. 3, lines 15-29 of Luich) as featured by Applicant's claim 1. The current across resistor 24 is not constant, however. As stated by Luich, as temperature increases, the V_{be} of transistor 26 in FIG. 1 decreases, causing a larger voltage drop across resistor 24 and **drawing an increased current therethrough**. See Luich, col. 3, lines 17-20. Thus, the current through resistor 24 is not constant as featured by Applicant's claim 1.

Furthermore, the source coupled to resistor 24 in FIG. 1 of Luich is a reference voltage, not a constant current source as featured by Applicant's claim 1.

Furthermore, Applicant's claim 1 recites at least one switch connected to said at least one reference resistor to selectively couple said voltage to said input word lines. In contrast and as shown in FIG. 1 of Luich, **the voltage is not coupled to input word lines**; rather, the voltage is coupled to the bit lines.

In addition, to establish a prima facie case of obviousness, there must be some suggestion or motivation in the references to modify the reference or to combine reference teachings. There is no motivation to combine the teachings from Luich and Watanabe because the circuit in FIG. 1 of Luich works as it is. Watanabe's contribution

is cosmetic. As stated in Luich, the circuit in FIG. 1 of Luich already can generate two states, on and off. See Luich, col. 4, lines 16-18. Thus, a switch is not necessary. In fact, Luich teaches away from using the switch because if the signal from node 10 of FIG. 1 of Luich falls very quickly, the presence of the low impedance source, transistor 48, may cause undesirable ringing in the feedback loop. See Luich, col. 4, lines 44-48. Thus, the motivation to combine has not been established.

There also must be a reasonable expectation of success. Adding a switch may render the circuit inoperative because it prevents the current adjustment by transistor 26 in FIG. 1 of Luich in response to an increase in temperature and thus defeats the intended purpose of the circuit in FIG. 1 of Luich. Thus, a *prima facie* case of obviousness has not been established.

From all of the arguments above, Applicant respectfully submits that the rejection of claim 1 under 35 U.S.C. §103 is improper, and reconsideration and withdrawal is respectfully requested.

With respect to claim 2, Applicant respectfully submits that the rejection under 35 U.S.C. §103 is improper for the reasons discussed above with respect to claim 1 from which claim 2 depends, and reconsideration and withdrawal is respectfully requested.

Furthermore, in FIG. 1 of Luich, the Examiner asserted that resistors 13 and 14 which are assigned as data resistors by the Examiner, have the same conductive properties as resistor 24, which is assigned as the reference resistor by the Examiner. Thus, the Examiner asserted that the reference resistor in the device disclosed by Luich is selected to be the same as the conductive properties of the data resistors as featured by Applicant's claim 2. Applicant respectfully requests that the Examiner reconsider this position. The combination of Luich and Watanabe fails to teach or suggest the feature that the conductive properties of the reference resistor is **selected** to be the **same** as those of the data resistors. Applicant could find no teaching or suggestion for this feature in Luich and, accordingly, requests the Examiner to identify this feature in Luich or withdraw the rejection.

With respect to claim 3, Applicant respectfully submits that the rejection under 35 U.S.C. §103 is improper for the reasons discussed above with respect to claim 1 from which claim 3 depends, and reconsideration and withdrawal is respectfully requested.

With respect to claim 6, Applicant respectfully submits that the rejection under 35 U.S.C. §103 is improper for the reasons discussed above with respect to claim 2 from which claim 6 depends, and reconsideration and withdrawal is respectfully requested.

Furthermore, Applicant's claim 6 includes the feature that said data resistor is comprised of a metal oxide. The combination of Luich and Watanabe fails to teach or suggest the feature that the data resistor is comprised of a metal oxide. Applicant could find no teaching or suggestion for this feature in Luich and, accordingly, requests the Examiner to identify this feature in Luich or withdraw the rejection.

With respect to claim 7, Applicant respectfully submits that the rejection under 35 U.S.C. §103 is improper for reasons similar to those discussed above with respect to claim 2 and for the reasons discussed above with respect to claim 1 from which claim 7 depends, and reconsideration and withdrawal is respectfully requested.

With respect to claim 8, Applicant respectfully submits that the rejection under 35 U.S.C. §103 is improper for the reasons discussed above with respect to claim 7 from which claim 8 depends, and reconsideration and withdrawal is respectfully requested.

With respect to claim 11, Applicant respectfully submits that the rejection under 35 U.S.C. §103 is improper for the reasons discussed above with respect to claim 7 from which claim 11 depends, and reconsideration and withdrawal is respectfully requested.

Furthermore, Applicant's claim 11 includes the feature that said data resistor is comprised of a metal oxide. The combination of Luich and Watanabe fails to teach or suggest the feature that the data resistor is comprised of a metal oxide. Applicant could find no teaching or suggestion for this feature in Luich and, accordingly, requests the Examiner to identify this feature in Luich or withdraw the rejection.

With respect to claim 12, Applicant respectfully submits that the rejection under 35 U.S.C. §103 is improper for the reasons discussed above with respect to claim 1

from which claim 12 depends, and reconsideration and withdrawal is respectfully requested.

Furthermore, Applicant's claim 12 includes the feature that the amplifier output voltage is determined from the value of the constant current and said feedback resistor. The combination of Luich and Watanabe fails to teach or suggest the feature that the amplifier output voltage is determined from the value of the constant current and a feedback resistor. Applicant could find no teaching or suggestion for this feature in Luich and, accordingly, requests the Examiner to identify this feature in Luich or withdraw the rejection.

With respect to claim 13, the rejection under 35 U.S.C. §103 is improper for the reasons discussed above with respect to claim 12 from which claim 13 depends, and reconsideration and withdrawal is respectfully requested.

With respect to claim 14, the rejection under 35 U.S.C. §103 is improper for the reasons discussed above with respect to claim 13 from which claim 14 depends, and reconsideration and withdrawal is respectfully requested.

Furthermore, Applicant's claim 14 includes the feature that the feedback resistor is temperature independent. The combination of Luich and Watanabe fails to teach or suggest the feature that the resistor 46 in FIG. 2 of Luich, which is assigned by the Examiner as the reference resistor, is temperature independent. Applicant could find no teaching or suggestion for this feature in Luich. .

With respect to claims 15, 16, and 19 these claims are patentable for the reasons discussed above with respect to claim 1 from which these claims depend, and reconsideration and withdrawal is respectfully requested.

With respect to claims 17 and 18, Applicant respectfully submits that the rejection under 35 U.S.C. §103 is improper for the reasons discussed above with respect to claim 12 from which these two claims depend, and reconsideration and withdrawal is respectfully requested.

With respect to claim 22, Applicant respectfully submits that the rejection under 35 U.S.C. §103 is improper for the reasons discussed above with respect to claim 19

from which claim 22 depends, and reconsideration and withdrawal is respectfully requested.

Furthermore, Applicant's claim 22 includes the step of selectively switching said reference voltage to said word line. The combination of Luich and Watanabe fails to teach or suggest the feature that the reference voltage is selectively switched to said word line. Applicant could find no teaching or suggestion for applying the reference voltage to the word line or the selective switching feature in either Luich or Watanabe. The device in FIG. 1 of Luich discloses, at best, applying the reference voltage to the bit lines.

With respect to claim 23, the combination of Luich and Watanabe fails to teach or suggest that there are data resistors and that at least one switch connected to said at least one voltage source to selectively couple said voltage to said input word lines. For arguments regarding to data resistors, see arguments above with respect to claim 1, and for arguments regarding selectively switching a voltage sources to input word lines, see arguments above with respect to claims 1 and 22.

(b). Rejection of Claims 4, 5, 9, 10, 20, and 21

Claims 4, 5, 9, 10, 20, and 21 are rejected under 35 U.S.C 103 as being unpatentable over Luich in view of Watanabe and U.S. Patent No. 5,859,458 issued January 12, 1999 to Hsueh et al. (hereinafter "Hsueh"). Applicant respectfully disagrees that a prima facie case of obviousness has been established according to MPEP 2143.

With respect to claims 4 and 5 which depend on claim 3, the combination of Luich and Watanabe does not disclose or suggest all features in claim 3 as discussed above with respect to claim 3, the combination of Luich, Watanabe, and Hsueh does not disclose or suggest all features in claim 3 and, therefore, the combination of the three does not disclose or suggest all features in claim 4 or 5.

With respect to claims 9 and 10 which depend on claim 8, since the combination of Luich and Watanabe does not disclose or suggest all features in claim 8 as discussed above the combination of Luich, Watanabe, and Hsueh does not disclose or suggest all

features in claim 8 and, therefore, the combination of the three does not disclose or suggest all features in claim 9 or 10.

With respect to claims 20 and 21 which depend on claim 19, since the combination of Luich and Watanabe does not disclose or suggest all features in claim 19 as discussed above with respect to claim 19, the combination of Luich, Watanabe, and Hsueh does not disclose or suggest all features in claim 19 and, therefore, the combination of the three does not disclose or suggest all features in claim 20 or 21.

III. Amendments to Claims 2, 7, and 19

Claim 2 has been amended to more particularly point out the invention. Claim 7 has been amended to correct a typo and to more particularly point out the invention without narrowing the scope of the claim. Claim 19 has been amended to more particularly point out the invention without narrowing the scope of the claim. Applicant respectfully submits that no new matters are added for these amendments.

IV. Summary

Having fully addressed the Examiner's objections and rejections, it is believed that in view of the preceding remarks, this entire application stands in a condition for allowance. If, however, the Examiner is of the opinion that such action cannot be taken, he is invited to contact the Applicant's attorney at the number and address below in order that any outstanding issues may be resolved without the necessity of issuing a further Action. An early and favorable response is earnestly solicited.

Please address all future correspondence to Intellectual Property Docket Administrator, Gibbons, Del Deo, Dolan, Griffinger & Vecchione, One Riverfront Plaza, Newark, NJ 07102-5497. Telephone calls should be made to Vincent E. McGahey at (973) 596-4500.

V. Fees

If any additional fees are due in respect to this amendment, please also charge them to Deposit Account No. 501735.

Respectfully submitted,



Vincent E. McGeary.
Reg. No. 42,862
ATTORNEY FOR APPLICANT

Gibbons, Del Deo, Dolan, Griffinger & Vecchione
One Riverfront Plaza
Newark, NJ 07102-5497

Version With Marking to Show Changes MadeIN THE SPECIFICATION

Amended the paragraph beginning from line 19, page 7 to line 4, page 8.

In accordance with one embodiment of the invention, reference resistor 29 is formed from a material with substantially similar properties of conductivity as those of data resistor 30. For example, if data resistor 30 is comprised of a metal oxide, reference resistor 29 is also comprised of a metal oxide. In this case, the resistance values of data resistor 30 and reference resistor 29 change at substantially the same rate in response to a change in temperature. Accordingly, with constant current I_a supplied to reference resistor 29, the voltage developed across reference resistor 29 at any temperature is substantially the same as the voltage drop across data resistor 30 caused by current I_a flowing through data resistor 30. The input reference voltage is thus adjusted at a rate that maintains current I_a substantially constant through data resistor 30 when the associated word line is selected.

IN THE CLAIMS

- 1 2. (Amended) A temperature compensation circuit as recited in Claim 1 wherein
2 electrical conductive properties of said reference resistor are selected to be
3 the same as the electrical conductive properties of said data resistors.

- 1 7. (Amended) A temperature compensation circuit as recited in Claim 1 wherein
2 conductive properties of said reference [resistor s] resistors are selected [to be
3 substantially similar to the conductive properties] such that a change in electrical
4 conductive properties of said reference resistors matches a change in electrical
5 conductive properties of said data resistors.

1 19. (Amended) A method to maintain a current through Read-Only Memory (ROM)
2 substantially constant as temperature changes wherein said ROM employs a
3 plurality of data resistors to provide electrical interconnections between a plurality
4 of input lines and output lines, comprising the steps of:

5 selecting a reference resistor [having substantially similar properties of
6 conductivity as] wherein a change in electrical conductive properties of said
reference resistor matches a change in electrical conductive properties of said
7 data resistor;

8 supplying a reference voltage to said input lines, said reference voltage
9 developed by supplying a constant current to said reference resistor, wherein
10 said reference voltage is responsive to a change in temperature.